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THE GENUS *WALLABIA* TROUESSART (MARSUPIALIA: MACROPODIDAE) IN THE UPPER CAINOZOIC DEPOSITS OF QUEENSLAND

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ABSTRACT

The previously monotypic genus *Wallabia* Trouessart, 1905, is re-defined to include a fossil species, *W. indra* (De Vis, 1895) from the Upper Cainozoic fluviatile deposits of the Darling Downs area, southeastern Queensland. '*Halmaturus*' *vishnu* De Vis, 1895, is shown to be synonymous with *W. indra*.

The present study comprises part of an overall revision of the fossil macropodids from the Pleistocene fluviatile deposits in the eastern Darling Downs and the Chinchilla Sand of Late Pliocene age in the west of this area. The majority of the larger grazing macropodines were referred by De Vis (1895) to *Halmaturus* Illiger, a junior secondary hymonym of *Macropus* Shaw. Bartholomai (1967, 1973a, 1973b, 1975) has shown that the material included representatives of the genera *Troposodon* Bartholomai, 1967, *Protemnodon* Owen, 1874, *Fissuridon* Bartholomai, 1973 and *Macropus* Shaw, 1790, in addition to material which is here referred to *Wallabia*. This material is relatively uncommon compared with other large grazing elements in the faunas represented, and the available sample is too small to permit statistical evaluation of the population from which it was drawn.

All measurements throughout are in millimetres.

Genus **Wallabia** Trouessart, 1905

Wallabia Trouessart, 1905, p. 834 (type species *Kangurus bicolor* Desmarest, 1804 = *Kangurus ualabatus* Lesson, 1827, by subsequent designation of Iredale and Troughton, 1934).

In addition to designating *Wallabia bicolor* (Desmarest) as the type species for the genus *Wallabia*, Iredale and Troughton (1934) followed Trouessart (1905) in listing all of the extant, medium-sized brush wallabies within this genus. These species previously were regarded mainly within the genus *Macropus*. No attempt was made to take into account any related fossil species, but later, Troughton (1937, 1957) indicated the generic distinctness of species now referred to *Protemnodon* by Bartholomai (1973a). Troughton presented no convincing arguments to support this separation. Tate (1948) used *Protemnodon* widely for both living and fossil wallabies, while Stirton (1963) separated living and fossil representatives, using *Wallabia* for living species and *Protemnodon* for extinct forms.

Bartholomai (1973a, 1975) has introduced cranial morphological differences, results of comparative reproductive physiological studies by Sharman *et al.* (1966) and chromosome studies by Sharman (1961) to indicate the distinctness of *Wallabia bicolor*, the only living species referred to the genus, from all other living wallabies. Research by Kirsch (1968) on marsupial haemoglobin suggests that the species of wallabies and kangaroos, including *W. bicolor*, *Megaleia* and *Lagorchestes* are closely associated, but Bartholomai (1975) indicates that this cannot be verified from the fossil record because of general deficiencies in the known fossil samples available.

Calaby (1966) concludes, on the basis of behaviour and distinctive dental characters, that *Wallabia* should be recognized as a monotypic genus. This conclusion is supported here for living forms. Only a single species is added from the known fossil record.

GENERIC DIAGNOSIS: Medium sized macropodids; cranium with rostrum little deflected; diastema short; premaxillae relatively narrow in occlusal view; infraorbital canal very short; foramen ovale open, less anterolaterally directed than in *Macropus*; additional foramina usually present in alisphenoid bulla, lateral to, connected but well

separated from foramen ovale, presumably for mandibular branch of trigeminal nerve; basioccipital very broad between petrosals; anterior margin of basioccipital with reduced elevation; basisphenoid slope low; dorsal margin of supraoccipital narrowly U-shaped. Palate shallowly excavate and slightly downturned posteriorly. Masseteric foramen almost below anterior cheek teeth. I^3 groove at posterior one-third of lateral surface; DP^3 and anterior upper molars with strong ridges from paracone and metacone uniting across median valley; forelink absent. Lower molars with relatively low, rectilinear lophids and links; lateral margins of lophids bulbous; posterior surface of hypolophid not ornamented.

Wallabia indra (De Vis, 1895)
(Plate 53, Figs. 1–6)

Halmaturus indra De Vis, 1895, pp. 112–3, pl. 17, figs. 18, 20.

Halmaturus vishnu De Vis, 1895, pp. 114–6, pl. 17, figs. 3–4.

'*Halmaturus*' *vishnu* De Vis: Stirton, 1959, p. 124; Bartholomai, 1966, pp. 121–2, pl. 16, figs. 1–3.

'*Halmaturus*' *indra* De Vis: Bartholomai, 1966, pp. 116–7, pl. 15, figs. 4–6.

MATERIAL: Holotype, F3595, partial left mandibular ramus with P_2–M_1 (unerupted P_3 removed by fenestration, and no longer in the Queensland Museum collections), Darling Downs, SE.Q., (figd in part, De Vis, 1895, pl. 17, figs. 18, 20; figd Bartholomai, 1966, pl. 15, figs. 4–6). Preservation suggests derivation from the Chinchilla Sand, of Late Pliocene age.

Also referred is the lectotype of '*Halmaturus*' *vishnu*, F3860, a partial left mandibular ramus with P_3–M_4, adult, Darling Downs, SE.Q., (figd in part, De Vis, 1895, pl. 17, figs. 3–4; figd Bartholomai, 1966, pl. 16, figs. 1–3). Preservation suggests derivation from the Pleistocene fluviatile deposits of the eastern Darling Downs.

In addition, 7 juvenile mandibular rami, 8 adult mandibular rami and one maxillary fragment are referred from the following localities in the Darling Downs: Chinchilla; Middle Gully System, Chinchilla Rifle Range (Rifle Range No. 78, Par. Chinchilla); Dalby at 34–35 feet (c. 11 m) in a pump well; and from the eastern and western Darling Downs (particular localities unspecified).

SPECIFIC DIAGNOSIS: A relatively large species, with mandibular symphysis very slightly elevated, and with diastema relatively short. Lower cheek teeth low; P_2 with only one set of vertical labial and lingual ridges transecting crest; P_3 approximately as long as M_4, the longest molar; longitudinal crest nearly straight; anteriorly, base markedly tumescent; crest transected by 3–4 sets of ridges. DP_3 protolophid very narrow at crest, rectilinear, with forelink descending directly from protoconid; labial moiety of trigonid basin much reduced. Lower molars relatively broad with lophid margins broadly curved from crown base to crests in anterior view; lophid crests somewhat rectilinear; midlink moderately poorly developed; posterior cingulum absent. Upper molars relatively low, with strong anterior ridge from paracone, broad anterior cingulum, and posterior ridges from metacone and hypocone of similar strength, uniting well above crown base, delimiting slight posterior fossette.

DESCRIPTION: Mandible narrow, rather shallow. Symphysis not ankylosed, set at very low angle to base of mandible. Diastema relatively short, geniohyal pit very shallow, below anterior margin of P_3. Ventral margin of ramus rounded. Mental foramen moderately large, oval, well anterior to P_3, and just below diastemal crest. Ramus with shallow labial groove from below P_3 extending posteriorly to below M_2 and occasionally to below centre of M_3. Lingually, broad depression leads posteriorly to pterygoid fossa. Post-alveolar shelf short, leading to mesial wall of coronoid process. Masseteric crest raised to below level of alveolar margin. Angle of mandible, condyle and bulk of coronoid process not preserved.

I_1 unknown.

P^2 relatively short, robust, subovate in basal outline; longitudinal crest secant, curving slightly lingually in its posterior extension; transected mesially by a single set of vertical labial and lingual ridges, with production of well defined cuspule at crest; crown basally with labial and lingual tumescences, continuous around anterior margin, with production of small anterior basal cuspule.

DP_3 molariform, subtriangular in basal outline; lophids moderately low, with hypolophid crest much broader than protolophid; protolophid rectilinear but with hypolophid somewhat convex posteriorly; protoconid positioned above crown axis. Trigonid basin narrow, extremely poorly developed labially, short, its length being much less than distance between lophids. Forelink high, strong, descending without curvature anteriorly to point labiad to mid-point of high anterior cingulum, occasionally ornamented labially and lingually by a set of weak accessory ridges; anterolingual fossette developed in trigonid basin in conjunction with slight, variable anterior ridge from metaconid. Posterior ridge from protoconid moderately strong, curving labially to unite with moderately strong midlink, curving anterolingually from hypoconid; posterior ridge from metaconid weak, descending into lingual extremity of rounded talonid basin; labial moiety of talonid poorly developed descending at high angle from

TABLE 1: MEASUREMENTS FOR *Wallabia indra* (DE VIS), MANDIBLE

Specimen	P_2	DP_3	P_3	M_1	M_2	M_3	M_4
F3595*	6·7 × 4·3	7·1 × 4·2	—	8·5 × 5·6	—	—	—
F3860	—	—	10·1 × 4·1	7·8 × —	9·4 × 6·5	10·4 × 7·5	10·7 × 7·3
F4743	—	—	— × 4.7	7·6 × 5·7	9·0 × —	10·6 × 7·6	11·2 × 7·5
F4741	—	—	10·3 × 4·1	7·5 × —	8·5 × —	10·0 × —	10·8 × 7·0
F4746	—	—	—	—	8·7 × 5·7	9·8 × 6·8	10·0 × 6·8
F4749	—	6·7 × 3·4	—	— × 4·9	—	—	—
F4742	—	—	—	—	—	9·8 × 7·3	10·4 × 7·2
F4747	—	—	—	—	8·5 × 6·0	10·0 × 7·2	10·8 × 7·5
F3597	—	—	—	—	8·8 × 6·1	10·7 × 7·4	10·8 × 7·5
F2496	—	—	—	7·3 × 4·8	8·3 × 5·6	9·8 × 6·2	—
F4753	—	—	—	8·0 × 5·7	8·9 × 6·5	—	—
F4751	—	—	—	7·5 × 5·1	8·7 × 6·1	—	—
F4752	—	—	—	8·1 × 4·9	9·1 × 5·9	—	—
F4744	—	—	—	—	9·0 × 6·2	9·6 × 6·9	—
F3601	—	—	—	8·1 × 5·1	8·5 × 6·1	8·5 × 6·1	—

*Holotype

midlink. Anterior ridge from entoconid weak. Posterior of hypolophid rounded, unornamented, occasionally with slight posterolabial basal swelling.

P_3 elongate, subovate in basal outline, only very slightly shorter than M_4. Longitudinal crest secant, extremely slightly concave labially, or straight, transected by three or four sets of vertical labial and lingual ridges, with production of cuspules at crest; strength of ridges decreases posteriorly; base of crown markedly tumescent, produced to form noticeable cingulum anteriorly.

$M_1 < M_2 < M_3 < M_4$; molars subrectangular in basal outline, slightly constricted across talonid basin in anterior molars, more strongly constricted in posterior molars; lophids relatively low, almost rectilinear, with hypolophid somewhat more convex posteriorly; protolophid narrower than hypolophid in M_1 and M_2, but broader in M_3 and much broader in M_4; lateral surfaces of lophids markedly convex. Trigonid basin usually very broad, its length almost equalling distance between lophids. Forelink low, moderately strong, unornamented, descending anterolingually from protoconid, across labial moiety of trigonid basin, usually uniting with low anterior cingulum, labiad to axis of crown; very weak accessory ridge descends anteriorly from metaconid towards trigonid basin; lingual position of trigonid near horizontal, labial portion reduced and sloping. Slight ridge descends posteriorly from metaconid, occasionally uniting with similar ridge from entoconid across lingual margin of talonid basin. Midlink from hypoconid low, crossing labial moiety of talonid basin to unite with slight ridge from protolophid, labiad to axis of crown. Posterior of hypolophid unornamented, occasionally with swollen base delimited as slight posterior cingulum.

TABLE 2: MEASUREMENTS FOR *Wallabia indra* (DE VIS), MAXILLA

Specimen	M^2	M^3	M^4
F4740	8·6 × 7·4	9·6 × 7·7	9·7 × 7·2

Upper incisors, P^2, DP^3, P^3 and M^1 unknown.

$M^2 < M^3 < M^4$; molars subrectangular in basal outline, somewhat constricted across median valley. Lophs low, with protoloph slightly narrower than metaloph in M^2 and somewhat broader in M^3 and M^4, slightly anteriorly curved. Anterior cingulum relatively low, labially subhorizontal, but lingually ascending slightly, short; forelink not well defined, but anterior ridge from paracone strong, ascending slightly lingually to labial margin of cingulum. Posterior ridge from paracone weak, ascending into median valley. Midlink low, weak, curving posterolingually across median valley to unite with slight ridge from near mid-point of metaloph; lingual moiety of median valley V-shaped, labial moiety sharply U-shaped; low ridge occasionally present across lingual extremity of valley. Posterior ridges from metacone and hypocone moderately strong, approximately equally developed, uniting to delimit slight posterior fossette below axis of crown. Base of crown somewhat swollen posteriorly and posterolingually.

Discussion: Bartholomai (1966) redescribed and refigured the holotype specimen of *Wallabia indra* (De Vis), the only specimen referred by De Vis (1895) to the species. In the same publication, Bartholomai (1966) selected F3860 as the lectotype of '*Halmaturus*' *vishnu* De Vis. The holotype specimen of *W. indra* has preservation suggesting its derivation from the Chinchilla Sand of Late Pliocene age, while the lectotype of '*H*' *vishnu* appears to have been collected from Pleistocene fluviatile deposits of the eastern Darling Downs. The specimens are not accompanied by accurate locality data, but material here referred to *W. indra* has been derived from both deposits.

Neither the holotype of *W. indra* nor the lectotype of '*H*' *vishnu* is figured herein, as adequate illustrations are presented in Bartholomai (1966 pl. 15, figs. 4–6, and pl. 16, figs. 1–3, respectively).

Although the samples from these areas are small, sufficient evidence exists to indicate almost complete overlap in size, and mandibular measurements are presented in Table 1. Morphologically, no differences are apparent in the material at present known, and relegation of '*H*' *vishnu* to synonymy is considered justifiable. It should be noted, however, that the complete dentition of the species is as yet unknown. The single referred maxilla, measurements for which are povided in Table 2, is from the Chinchilla Sand, at Chinchilla.

It is usual for material from the eastern Darling Downs to be specifically distinct from that in the Chinchilla Sand, but as indicated for the genus *Troposodon* by Bartholomai (1967), this is not without exception. Geologically, the time difference between the Chinchilla Sand and the Pleistocene fluviatile deposits does not appear to be excessive and the occasional occurrence of the same species in both stratigraphic units is not surprising.

Association of upper and lower jaw fragments has been effected by considerations of both size and morphology, and while fragments have not, as yet, been located together, their present association is considered correct. No post-cranial remains have been referred to *W. indra* although considerable disarticulated material, derived from small macropodine species, is present in the collections of the Queensland Museum.

Remarkable morphological similarity exists between *W. indra* and the extant *W. bicolor* (Desmarest), the type species of the genus. Indeed, the only distinction which can be drawn at this stage is in regard to the sizes of the species involved. While it has been shown by Bartholomai (1975), with respect to *M. agilis siva* (De Vis), that size differences may be generally insufficient for even subspecific distinction, the *W. indra* sample is too small to enable statistical evaluation to be undertaken at this stage. The log difference diagram shown in Fig. 1, is based on single specimens, but nevertheless illustrates the similarity in proportions existing in the cheek teeth of *W. indra* and *W. bicolor*. The similarly elongate nature of P_3 compared with the molars is particularly evident.

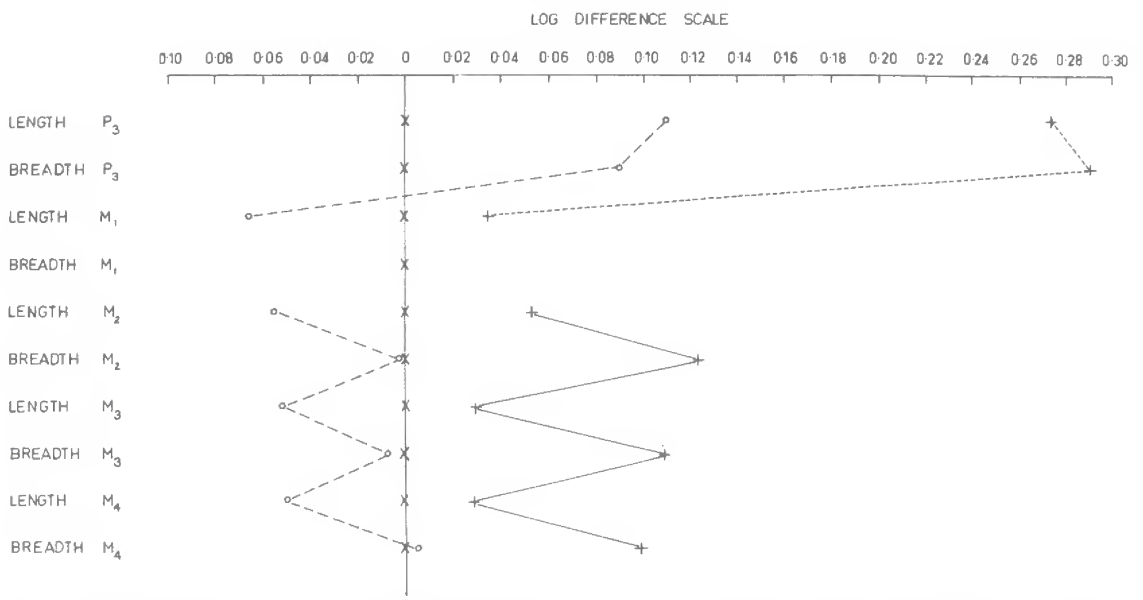

Fig. 1: Log difference diagram illustrating proportional relationships of *Wallabia indra* (F3860, ♀) and *W. bicolor* (J4890, ♂), using *Macropus parryi* (J10756) as standard.

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